



Grades K-5
English and Spanish

Exploring Science

Real Science. Real World. Right Now.



Exploring Science



Built for the Next Generation Science Standards



The Next Generation Science Standards (NGSS) are changing the way science is taught by incorporating a 3-Dimensional approach to instruction. Teachers now need to combine Disciplinary Core Ideas (DCI), Science and Engineering Practices (SEP), and Crosscutting Concepts (CCC) into each lesson to prepare students to master the Performance Expectations.

How does *Exploring Science* help teachers make these changes?

SCIENCE EDUCATION WILL INVOLVE LESS:	SCIENCE EDUCATION WILL INVOLVE MORE:	EXPLORING SCIENCE HELPS BY:
Science ideas being taught separately from their related real-world phenomena	Instruction about systems and modeling real-world phenomena to provide context for scientific ideas	Introducing real-world phenomena through Explorer and scientist experience; asking students to think critically by applying newly learned content to solve real-world problems (see pages 1–2)
Worksheets	Student-produced writing in Science Notebooks, reports, and multi-media presentations that explain and argue from evidence	Utilizing personalized Science Notebooks for each student to record data, modeling how real-world scientists and engineers work (see page 3)
Hands-on activities and labs that have pre-determined results	Varied investigations driven by student-generated questions with multiple possible outcomes that lead to deeper understanding of scientific core ideas	Providing students with a wide variety of hands-on practice activities to prepare them for the open-ended, self-guided Performance Expectation tasks (see pages 4–5)

"I have watched my students grow in their learning of science and the joy of thinking outside the box. The program is amazing."

—KARINA C., MARYLAND

Authentic National Geographic Experience

Exploring Science connects students to real-world science and to real National Geographic Explorers, scientists, and engineers. Students learn **Science and Engineering Practices**, **Disciplinary Core Ideas**, and **Crosscutting Concepts** from real scientists and Explorers who use those skills every day to make new discoveries and to solve problems.

National Geographic Explorers

A National Geographic Explorer hosts each grade level of *Exploring Science*, introducing students to the practices and skills scientists and engineers use to do their work.

Each grade includes multiple Explorers and scientists who:

- » Are role models for students and encourage them to act and think like real scientists
- » Demonstrate how and why students will use their Science Notebooks
- » Introduce the **phenomena** and concepts of each unit



Kindergarten

Lead Explorer
Jennifer Burney
 Environmental Scientist
 National Geographic Emerging Explorer

Grade 3

Andrés Ruzo
 Geoscientist
 National Geographic Young Explorer

Grade 1

Nalini Nadkarni
 Forest Ecologist
 National Geographic Grantee

Grade 4

David Molina Sengul
 Biomedical Engineer
 National Geographic Emerging Explorer

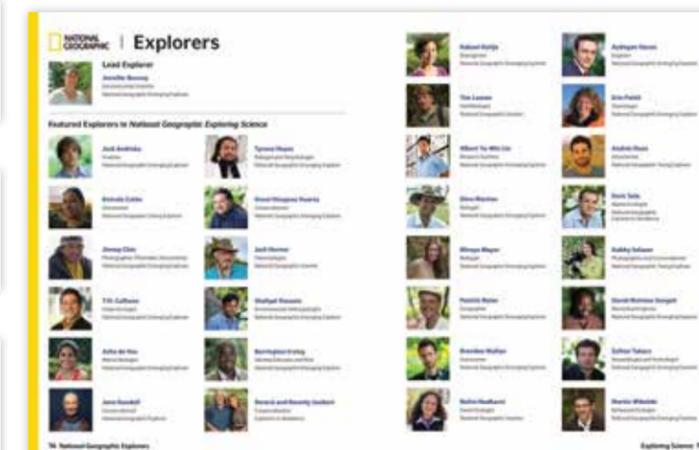
Grade 2

Asha de Vos
 Marine Biologist
 National Geographic Emerging Explorer

Grade 5

Andrés Ruzo
 Geoscientist
 National Geographic Young Explorer

Host Explorers for each grade



Complete Explorer list, Grades K–5 — Teacher's Edition, pp. T4–T5



MindTap Digital

National Geographic Explorer videos appear in MindTap. Explorers take students into the field introducing students to science phenomena.



Science with a Human Connection

Exploring Science depicts real scientists, engineers, and photographers in the real world doing real science right now.

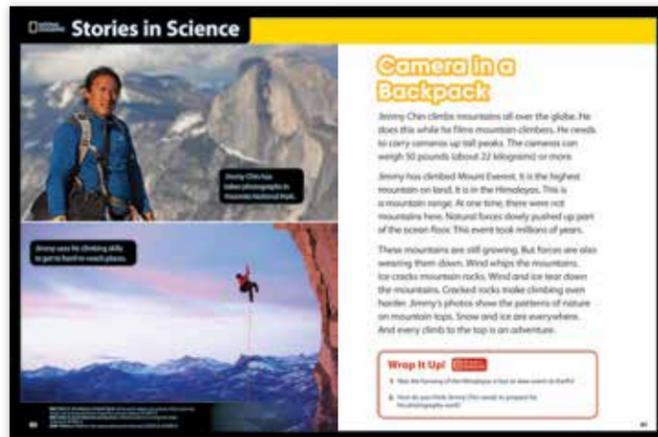
Diverse Science Role Models

Exploring Science includes Explorers and scientists from all backgrounds. Students see many paths to becoming a scientist or engineer to prove that **any student of any ability can be a scientist or Explorer.**



Stories in Science

Students are introduced to scientists and engineers from all backgrounds (culture, gender, ability). Historical and contemporary figures are shown overcoming challenges to make scientific advances and discoveries.

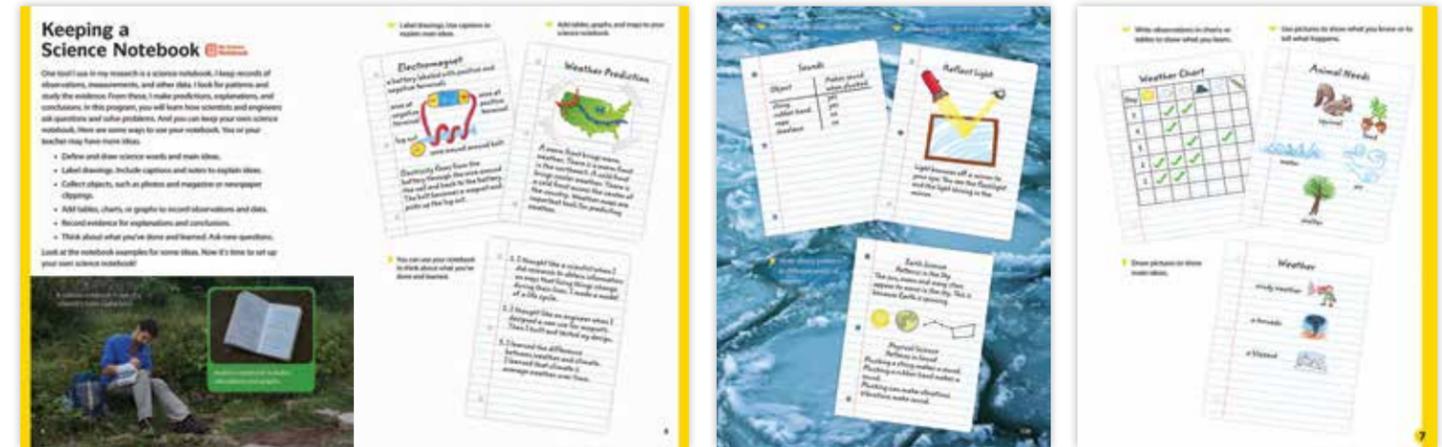


“...the inclusion of actual scientists in the textbook allows students to essentially meet someone who has found success in the science field.”

—TRACI T., NEW YORK

Real Science Applied with Science Notebooks

The Explorers in Exploring Science model for students how they use their science notebooks as they practice real-world science. Students will then apply their knowledge by creating and keeping their own science notebook.



Students demonstrate their knowledge by writing, drawing, and documenting their science experience.



Science Notebooks offer students the opportunity to practice science and record data like real scientists.



MindTap Digital

The Interactive eBook in MindTap includes digital notebook activities and a downloadable **Science Notebook Companion.**



Data sheets for collecting data can be completed and inserted into student Science Notebooks.

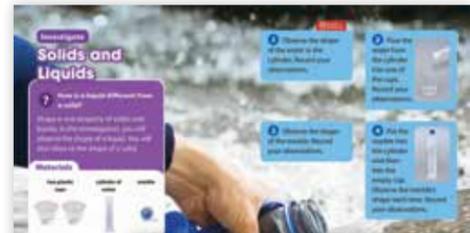


Some lessons include a digital notebook option for students to draw answers to questions applying the practices of the NGSS.

Hands-on Practice for NGSS and STEM

Exploring Science integrates hands-on investigations and activities right into the content. Disciplinary Core Idea content is supported by hands-on lessons designed to apply the Science and Engineering Practices and the Crosscutting Concepts.

Hands-On STEM Practice



Investigate activities guide students through the steps to prepare for the Science and Engineering Practices in the Performance Expectations.



STEM Projects provide unique, real-world challenges for students to solve using research and engineering practices.



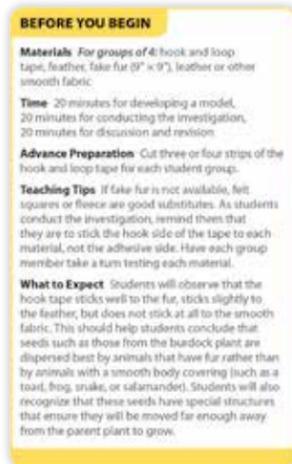
Think Like a Scientist and **Think Like an Engineer** are Performance Expectation activities where students apply their knowledge and skills in 3-D, hands-on performances.



Citizen Science projects allow students to collect real data which can be shared with scientists, contributing to real-world science research.

Teacher Support for Hands-on Lessons

The Teacher's Editions include everything teachers need to conduct the variety of hands-on lessons. Lessons include teaching multiple dimensions, differentiation support, Science Notebook support, and assessment.



"The activities are hands-on, engaging, and reach all levels of learners."

—LAURA F., NEW JERSEY

Hands-on lesson support includes materials needed, estimated time, what to do in advance, other tips, and what to expect for the outcome

Variety of Lessons Support 3-Dimensional Instruction

Each unit introduces the 3-Dimensions of the NGSS from different perspectives through a variety of lesson types.



Disciplinary Core Ideas (DCI) and **Crosscutting Concepts** are supported in *Stories in Science* lessons which feature scientists from all backgrounds.



Science and Engineering Practices (SEP) are applied in hands-on *Investigate* activities where students explore aspects of specific DCIs.



DCIs and **SEPs** are supported with *STEM Projects* that engage students in defining real world problems and developing and refining solutions.



Performance Expectation activities are presented in *Think Like a Scientist* and *Think Like an Engineer* lessons that engage students in applying all 3 Dimensions in one hands-on performance task.



MindTap Digital Lesson Enhancements

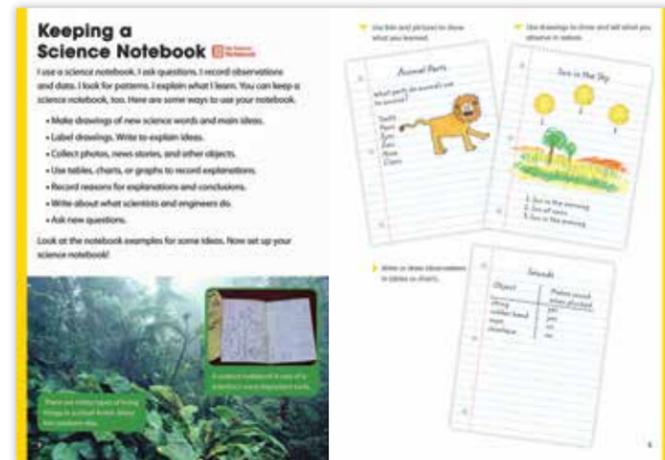
DCIs and **SEPs** come to life even more in the MindTap interactive lessons, Virtual Labs, and Explorer videos. Students experience the 3-Dimensions digitally to further prepare them for mastering the **Performance Expectations**.



Assessments in a Variety of Formats

Exploring Science provides teachers with a variety of self-assessments, formative assessments, and summative assessments to support instruction and to assess student progress.

Student Self-Assessment



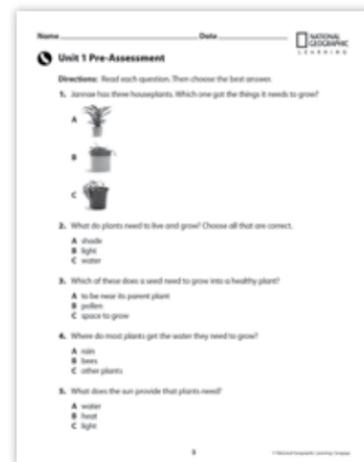
Science Notebooks help students monitor their own learning and reflect on their thinking and understanding of key concepts and practices.



Student Rubrics for each type of hands-on lesson are available in the Science Notebook Companion. Students monitor their progress and record comments and questions in their notebooks.

Formative Assessment

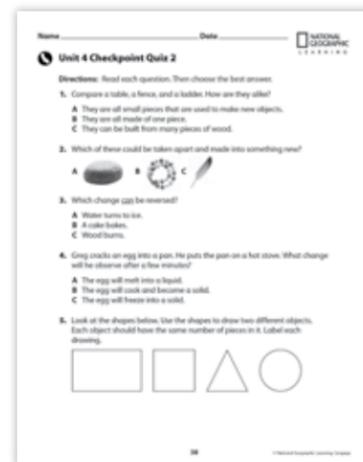
Formative assessment is available in the student book *Wrap It Up!* questions for each lesson and in the Assessment Handbook. The Assessment Handbook includes:



Unit Pre-Assessments help assess student prior knowledge of the **DCIs** for the unit.



Unit Opening Activities provide additional insight into student thinking about **DCIs** and their readiness to apply one or more of the **SEPs** targeted in the unit.



Quizzes provide a formative check of students' learning at the end of each lesson sequence.



Summative Assessment

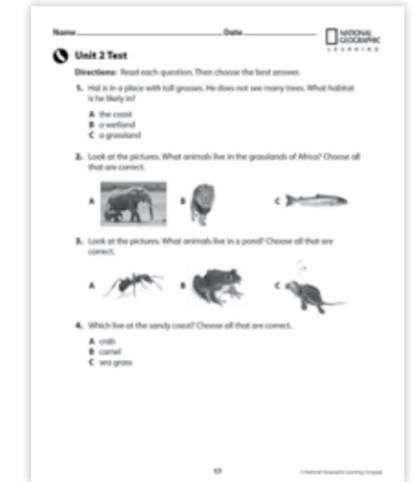
The Assessment Handbook provides multiple summative assessment components to measure student progress and mastery of the 3-Dimensions.



Unit Performance Tasks use a variety of formats that require students to demonstrate at least two of the three Dimensions associated with particular **Performance Expectations**.



Rubrics for all *Investigate* activities, *STEM Projects*, *Think Like a Scientist*, and *Think Like an Engineer* activities align with the NGSS.



Unit Tests use a combination of constructed response and selected response items to assess student mastery of the targeted **Performance Expectation**.

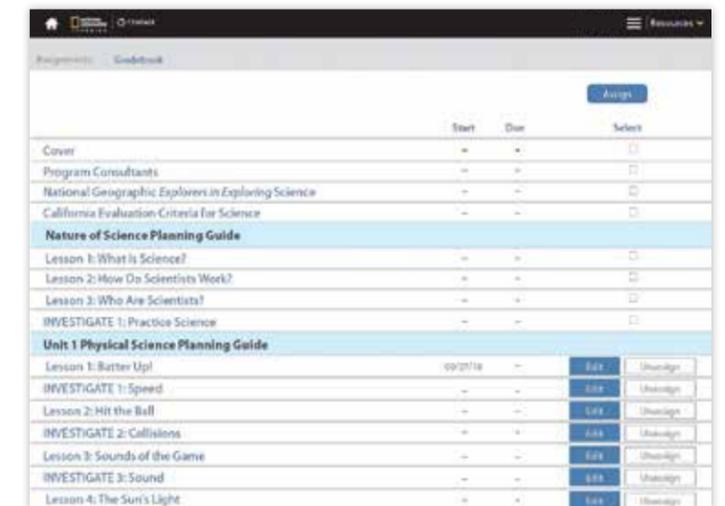


MindTap Digital Gradebook

The MindTap Gradebook and its analytics tools allow teachers to track and analyze an individual student's progress and view the class grades for each activity. Teachers can view assignment details such as the distribution of answers by item, view the scores and answers for each individual student, and categorize assignments for different assessments.

ExamView

Create and customize tests from a variety of question types based on Disciplinary Core Ideas and Performance Expectations from the NGSS. Print or export tests in various file formats.



“I love science, and I love this book!
I even read it when I’m not supposed to!”

—2ND GRADE STUDENT, MARYLAND

Components

Kindergarten



MindTap Digital (English and Spanish)



Big Books (Life, Earth, Physical, Let's Do Science)



Teacher's Edition

Grade 1



MindTap Digital (English and Spanish)



English and Spanish Student Editions

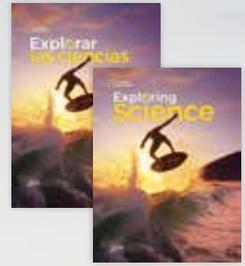


Teacher's Edition

Grade 2



MindTap Digital (English and Spanish)



English and Spanish Student Editions

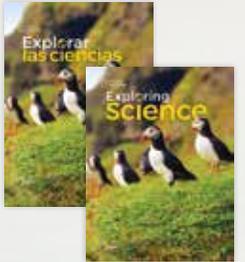


Teacher's Edition

Grade 3



MindTap Digital (English and Spanish)



English and Spanish Student Editions



Teacher's Edition

Grade 4



MindTap Digital (English and Spanish)



English and Spanish Student Editions



Teacher's Edition

Grade 5



MindTap Digital (English and Spanish)



English and Spanish Student Editions



Teacher's Edition

For more information, visit
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